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10/578,016	05/03/2006	Pentti Lipponen	U 016279-7	6659

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EXAMINER	
KREINER, MICHAEL B	
ART UNIT	PAPER NUMBER
4174	
MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/578,016	LIPPONEN, PENTTI	
	Examiner	Art Unit	
	Michael Kreiner	4174	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *5/3/06*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *1-10* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 May 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/2/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Examiner's Note

1. The preliminary amendments filed on 3 May 2006 have been acknowledged.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on 2 February 2007 has been considered by the examiner.

Claim Objections

4. Claim 19 and 20 are objected to because of the following informalities: there is no antecedent basis for the "turning of the locking piece." "Pivoting" would properly describe the motion of "a locking piece configured to pivot." Appropriate correction is required.

5. Claim 20 is objected to because of the following informalities: "ar-ranged" should read "arranged." Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 11, 12, 14-17, and 19-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Mayhew et al. (U.S. Pat. No. 4,079,901).

Regarding claim 19, Mayhew teaches a locking device for a catapult, comprising: at least one locking piece (76 in fig. 3) configured to pivot around a joint towards a launching direction and towards a returning direction of the catapult (shown by arrows in fig. 4), a connecting member (78 in fig. 3) provided in the locking piece, and to which connecting member a carriage (26 in fig. 3) comprised by the catapult is connectible before a launch and from where it is released after the launch (col. 3 *l.* 67 through col. 4 *l.* 4), and wherein the locking device comprises at least one takeoff damper (82 in fig. 3), and the takeoff damper is configured to generate a damping force, and wherein the takeoff damper is connected to the locking piece and configured to resist the turning of the locking piece towards the launching direction (col. 3 *l.* 20-23).

Regarding claim 20, Mayhew teaches that the takeoff damper (78) is a pressure medium cylinder (col. 4 *l.* 4-5), the takeoff damper is connected to the locking piece (76) by means of a first joint (connection formed by virtue of the frictional contact between the locking piece and the damper), and further to a body of the catapult by means of a second joint (connection shown in fig. 4), the shortest distance of a straight line passing through the first joint and the second joint is arranged to generate an effective distance, and the turning of the locking piece after the launching moment is arranged to reduce said effective distance (the takeoff damper is shown to move from a first extended position in fig. 3 to a second compressed position in fig. 4 in a linear fashion, as indicated by the arrow in fig. 4), the damping force also being arranged to decrease

substantially in the same ratio (the takeoff damper is configured to provide a maximum reaction force to the locking piece at its first extended position and decrease to a minimum reaction force at its second compressed position, as is known in the art).

Regarding claim 16, Mayhew teaches a catapult (10 in fig. 1) for launching an unmanned aircraft and comprising: an elongated body (16 in fig. 1), a launching position being provided on a portion of a first end thereof (rightmost end of 16 in fig. 1), and a releasing position being provided on a portion of a second end thereof (leftmost end of 16 in fig. 1), a carriage (26) movable from the launching position to the releasing position and back (col. 4 *l.* 5-11), and the carriage comprising fastening members (86 in fig. 1) for supporting the aircraft (col. 3 *l.* 27-29), a launching device configured to generate a launching force for accelerating the carriage in a launching direction from the launching position to the releasing position (col. 3 *l.* 58 through col. 4 *l.* 5), at least one locking device (78 in fig. 3) for keeping the carriage at the launching position and for releasing it at a launching moment (col. 3 *l.* 67 through col. 4 *l.* 1), at least one takeoff damper (82) configured to generate a damping force whose direction is opposite relative to the launching force, and the damping force is arranged to restrict the acceleration of the carriage at the launching moment (col. 3 *l.* 20-26), and wherein the damping force is at its maximum at the launching moment and that the damping force is arranged to decrease to zero after the carriage has moved a damping distance of a predetermined magnitude in the launching direction (the takeoff damper is shown to move from a first extended position in fig. 3 to a second compressed position in fig. 4 in a linear fashion, as indicated by the arrow in fig. 4, and the takeoff damper is configured to provide a

maximum reaction force to the locking piece at its first extended position and decrease to a minimum reaction force at its second compressed position, as is known in the art).

Regarding claim 17, Mayhew teaches that the locking device (78) comprises at least one locking piece (76) configured to pivot around a joint (pivot motion indicated by arrow close to 78 on fig. 4), the locking piece comprises at least one connecting member (78) for holding the carriage (26), the connecting member being configured to release the carriage when the locking piece is turned towards the launching direction by a predetermined angle position (carriage is released at the point where the angular position of the connecting member 78 longer restricts forward motion of anchor pin 74, col. 3 *l.* 67 through col. 4 *l.* 1), at least one takeoff damper (82) is configured to resist the turning of the locking piece towards the launching direction and configured to generate the damping force (col. 3 *l.* 20-26), and the magnitude of the damping force is arranged to decrease relative to a turning angle of the locking piece (the takeoff damper is configured to provide a maximum reaction force to the locking piece at its first extended position and decrease to a minimum reaction force at its second compressed position, as is known in the art).

Regarding claim 11, Mayhew teaches a method of launching a catapult, the method comprising: generating a launching force by means of a launching device (col. 3 *l.* 58-62), keeping a carriage (26) immovable by means of a locking device (78) at a launching position of the catapult, directing the launching force to the carriage (col. 3 *l.* 58 through col. 4 *l.* 4), which is movable from the launching position to a releasing position guided by a body of the catapult (col. 3 *l.* 58 through col. 4 *l.* 5), releasing the

locking device at a launching moment col. 3 *l.* 67 through col. 4 *l.* 1), whereby the carriage moves towards the releasing position at an accelerating speed by the action of the launching force (col. 4 *l.* 1-4), sending off an aircraft arranged in the carriage to the air at the releasing position (col. 4 *l.* 5-6), directing a damping force to the carriage at the launching moment (col. 4 *l.* 4-5), the direction of the force being opposite relative to the launching force (damping force provides a reaction force on latch pin 74 from locking device 78 that is opposite relative to the launching force), and the damping force resisting the movement of the carriage towards the releasing position (col. 3 *l.* 20-23), dimensioning the magnitude of the damping force to maximum at the launching moment (the magnitude of the damping force is inherently maximum at the moment of impulse), and reducing the damping force from maximum to minimum after the launch on a predetermined examination period (the takeoff damper is configured to provide a maximum reaction force to the locking piece at its first extended position and decrease to a minimum reaction force at its second compressed position).

Regarding claim 12, Mayhew teaches reducing the magnitude of the damping force relative to the movement of the carriage, and reducing the damping force from maximum to minimum once the carriage has travelled a predetermined damping distance towards the releasing position (the takeoff damper is configured to provide a maximum reaction force to the locking piece at its first extended position and decrease to a minimum reaction force at its second compressed position, as is known in the art).

Regarding claim 14, Mayhew teaches reducing the magnitude of the damping force substantially linearly (the takeoff damper is configured to provide a maximum

reaction force to the locking piece at its first extended position and decrease to a minimum reaction force at its second compressed position, as is known in the art).

Regarding claim 15, Mayhew teaches dimensioning the maximum damping force on the basis of the magnitude of the launching force employed (the maximum damping force depends upon the launch force provided to the vehicle, which is determined based upon the acceptable loads the vehicle can withstand, col. 4 *l.* 31-45, fig. 9).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 13 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mayhew et al. (U.S. Pat. No. 4,079,901).

Regarding claim 18, Mayhew teaches a catapult as claimed in claim 16, wherein the locking device (78) comprises at least one takeoff damper (82) configured to generate the damping force, the launching device comprises at least one actuator configured to generate the launching force (col. 3 *l.* 58-62). Mayhew fails to explicitly teach the catapult comprises means for identifying the magnitude of the launching force, and means for adjusting the damping force on the basis of the launching force. Mayhew teaches that different launching pressures will generate different launching forces. The pressure prior to launch could predictably be determined by using pressure gauges connected to the launching device, as was well known in the art of pneumatic actuation

at the time of the invention. Dials, such as those shown in fig. 5, that provide pressure readings, can be correlated to launch forces, using a chart such as fig. 9. Therefore, means for identifying the magnitude of the launching force would have been obvious to one skilled in the art at the time of the invention. Since damping force is directly related to the launching force, as is well known in the art, the damping force can be adjusted on the basis of the launching force.

Regarding claim 13, Mayhew teaches a method as claimed in claim 11, comprising: reducing the magnitude of the damping force relative to the movement of the carriage , and reducing the damping force once the carriage has travelled a predetermined damping distance towards the releasing position (the takeoff damper is configured to provide a maximum reaction force to the locking piece at its first extended position and decrease to a minimum reaction force at its second compressed position, as is known in the art). Mayhew fails to teach that the magnitude of the damping distance is between 150 and 500 mm. There is no evidence of the criticality of the claimed range “between 150 and 500 mm,” except in the sense that “studies conducted show that, in practice, efficient dampening is difficult to achieve with distances shorter than this [150 mm]” (specification, page 8). Since Mayhew’s disclosed invention teaches an efficient dampener, and does not specifically recite a damping distance shorter than 150 mm, the range limitation is considered optimization within the prior art conditions. See MPEP 2144.05 (in particular IIa. Optimization within Prior Art Conditions or Through Routine Experimentation).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Kreiner whose telephone number is (571)270-5379. The examiner can normally be reached on Monday-Thursday 7:30am-5:00pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly D. Nguyen can be reached on (571)272-2402. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. K./
Examiner, Art Unit 4174

/Kimberly D Nguyen/
Supervisory Patent Examiner, Art Unit 4174